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SWEET CORN PRODUCTION IN ALBERTA

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Corn on the Cob, is one of our most perishable vegetables. Without proper cooling, sweet corn harvested at its prime, starts to lose quality as soon as it is picked. Good quality sweet corn is not too difficult to achieve, and yet much of the corn sold in retail markets is of poor quality—largely because of inadequate cooling and poor handling practices.

Sweet corn is essentially a warm weather crop. It is easily killed by frost and may be seriously injured by prolonged cool temperatures, several degrees above freezing.

Soil Requirements

Sweet Corn will grow on a wide range of soil types. However, growth will be poor if the soil is very acid or poorly drained. For early maturity, well drained sandy-loam soils are best.

Varieties

There are many sweet corn hybrids. Some of these hybrids will do well in some areas and be quite poor in others. On the basis of tests conducted over the past years the following are recommended for commercial production:

Early — Seneca Daybreak, Morning Star
Midseason — Market Beauty, Golden Beauty, Seneca Beauty
Late — Victory Gold, Merit

Seedbed Preparation

A firm seedbed of good tilth is very important. It holds the moisture near the surface so that the corn may be seeded shallowly. Near the surface, the soil warms rapidly and the seed germinates quickly and evenly.

Seed Selection

Seed should be bought from a reliable source. Sized seed is preferable. Mechanical planters will not drop ungraded seed uniformily. It is advisable to purchase treated seed. If seed is not treated when purchased, then treat before planting with Captan, Phygon or Thiram. If you suspect wireworms to be present, apply Aldrin to the soil at time of seeding.

Seeding Rate

The rate of seeding will depend on the size of seed. Corn is normally seeded in rows 36 inches apart with plants 10 inches apart. This spacing requires approximately 17,000 plants/acre. Average size corn seed requires about 8 to 12 pounds of seed per acre.

Depth of Seeding

Planting too deep is a common error; seed should be planted only deep enough to place it in moist soil. In sandy loams 1½ inches is a good planting depth. In heavy soils one inch is sufficient.

Time of Seeding

Earliness is of prime importance so early seeding is recommended. However, sweet corn will not germinate at soil temperatures below fifty degrees Fahrenheit. In most areas of southern Alberta this means waiting until about May 10 to plant. To provide the market with a uniform product it is preferred to stagger the seeding dates of one variety rather than seed a number of varieties with progressively longer growing periods.

Fertilizers

If manure is not available, green manure of leguminous crops help prepare the soil for sweet corn. Manure and green manure crops improve the soil tilth as well as fertility.

Commercial fertilizers play an important role in producing high yields. Fertilizers that will provide fifty pounds of nitrogen (N) and fifty pounds of phosphate (P_2O_5) per acre should be placed in bands two inches to the side and two inches below the seed at time of seeding. When the corn is about knee high a second application at the same rate is of considerable help, particularly in lighter soils. Excess nitrogen will delay maturity.

Irrigation

Uniform soil moisture is essential for successful corn production. Furrow irrigation is the usual practice, although flood or sprinkler irrigation can be used. Apply two to four inches of water at each irrigation. On hot days, corn leaves may roll for an hour or two without danger of injury, but if the leaves remain rolled in early morning, this is a sign that irrigation is needed. The most crucial stages occur during the early growing period, during tasseling and at harvest.

Cultivation and Weed Control

One or more early cultivations are needed to control weeds and to establish irrigation furrows. All cultivations close to the row should be shallow to avoid disturbing the root system. Small weeds in the row can usually be smothered by a slight hilling of the corn. During the early part of the growing season cultivation will break the crust and permit water penetration and better aeration, and may aid emergence of the crop seedlings. Weeds are easiest to kill by cultivation when they are small; the longer a cultivation is delayed in a weed-infested field, the less effective it will be. Usually there is no advantage in cultivating sweet corn after it is 18 to 24 inches tall provided the stands are adequate to provide uniform shade.

Chemical Weed Control

Pre-emergence (before crop emerges) —

DNBP Amine — 3 to 4½ pounds/acre controls annual broadleaf weeds and seedling grasses.

Atrazine – 1½ to 2 pounds/acre controls annual broadleaf weeds and some seedling grasses. Should be followed by a light irrigation.
N.B. This treatment may be damaging to susceptible crops the following year. Use only if corn is planted in same location next year.

Post-emergence —

2-4-D Amine or **MCPA Amine** — 4 to 8 ounces/acre controls annual broadleaf weeds. Apply before corn is 6 inches high and while weeds are young. Treatment after this should be by directed spray with drop nozzles. Minimum water ten gallons of water per acre.

NOTE — Follow the manufacturer's directions at all times. For further information on weed control see publication "Chemical Control of Weeds in Specialty crops for Southern Alberta."

Harvesting

Sweet corn should be harvested in the milk stage. At this stage the exposed silks are brown, the rows of kernels are well filled to the tip, and the husks are firm around the ear. The kernels have attained almost their full size but the skins have not become tough. If harvest is delayed beyond this stage kernels become semi-solid or doughy and the sugar rapidly changes into starch.

Sweet corn is commonly harvested on the basis of exterior appearance and "feel". In learning to judge proper maturity on this basis, it will be helpful to husk several ears, to push the thumbnail into a few kernels and examine their contents. With experience, you will learn to distinguish on sight most ears that are ready for harvest. When you grasp the ear to break it from the stalk, the "feel" of immaturity will be revealed, although at a glance such ears may appear ready.

In hand harvesting break the shank, or stem of the ear, as close to the ear as possible, without breaking the main stalk or tearing the entire shank from the stalk. Grasp the ear near its base and bend it sharply downward or to one side with a rotary motion of the wrist.

Hydrocooling

At eighty-six degrees Fahrenheit about half the sugar content of the corn is lost within 24 hours after harvest. Sugar losses are greater at higher temperatures and less at lower temperatures. Therefore, it is very important that corn be cooled immediately after harvest. The process of hydrocooling consists of either showering or immersing the corn in cold water, thus transferring the corn's heat to the water. The warmer water is conducted to an ice bunker and passed over the ice, cooling the water and thus melting the ice. The cooled water is then transported back to the shower or immersion tank where it is again used for cooling the corn. In some hydrocoolers mechanical refrigeration systems are used instead of ice to cool the water. In ice-cooled systems it is important to remember that the ice must melt in order to cool the water. The water will cool faster with small chunks of ice than with large blocks.

In order to cool efficiently, the following conditions must be met:

1. The water should move over the surface of the corn.
2. The water should contact as much of the surface of the corn as possible.
3. The water must be kept cold (33°F. to 35°F.)

After hydrocooling, the temperature of the corn should not be above 45°F. The time required to cool corn properly depends on the field temperature of the corn. The hotter the corn the longer it takes to cool. Corn should be picked when temperatures are cool, preferably early in the morning. Under most conditions it will require 25 to 30 minutes to cool corn below 45°F.

Handling and Marketing

It must be kept in mind that corn is a highly perishable crop. After hydrocooling, corn should be kept cool through all phases of handling. This includes top-icing in the retail stores.

Sweet corn is best adapted for marketing close to the production district. Distant shipments are hazardous; they should not be attempted unless the corn is of excellent quality, and its temperature can be lowered to 40°F. and held there.

Even with nearby outlets, sweet corn must be marketed in an orderly fashion if losses are to be avoided. Because it is highly perishable it must be moved quickly. If the market becomes flooded, either prices drop drastically or a good deal of corn goes to waste. Orderly marketing can be encouraged by:

1. Staggering the seeding dates to give a steady supply of corn during the entire harvesting period.

2. Offering only high quality corn for sale.

3. Maintaining uniform packs and grades (Minimum length of edible corn should be six inches.)

4. Advising marketing outlets in advance when the harvest season will start so they can develop outlets before shipments arrive.

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DEPARTMENT of AGRICULTURE

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